Palimpsests New and Old

Martin Jamison

Ohio State University Libraries
175 West 18th Avenue
Columbus OH 43210

2006

Palimpsests New and Old

by Martin Jamison

2006

Abstract

We usually think of palimpsests as old texts written on parchment over earlier erasures, but digital technology has caused the present to be the most palimpsestic of times. A survey of modern-day palimpsests leads to an examination of why and how people created palimpsests in the past. Unlike the old analog documents, our electronic palimpsested texts face the likelihood of relatively rapid to split-second disintegration. Various projects are addressing this problem of E-document impermanence.

Introduction

When we think about palimpsests we picture reused parchment manuscripts. We imagine someone long ago carefully erasing an existing text to obtain a fresh surface for a new one. It is an accurate picture, but it supposes only one sort of palimpsest, whereas modern ones show up everywhere in today’s digitized world. We are constantly producing them.

In its traditional sense, a *pal*-imp-sest is “a manuscript from which the original writing has been scraped off in order to reuse the leaves for fresh writing” (Coulmas 1996, 385). The Greek word means “rubbed again,” referring to this process of scraping a previously used sheet of animal-skin parchment, or washing a sheet of plant-stalk papyrus, more or less clean of its writing.

By extending the definition to today’s world, we can see a palimpsest in any documentary surface, including electronic, that is cleaned off and then reused for another text. In this sense, palimpsests are commonplace modern artifacts. Urban graffiti is sandblasted off a wall or painted over, and soon reappears. Someone (digitally!) scribbles “wash me” on a car’s dirty window, which will be cleaned eventually and gradually made ready for the next message. The strongest influence is computer technology, rendering ours the most palimpsestic of times--and this state of affairs is somewhat dangerous because it risks the longevity of our documentary record. Below we will consider today’s problem of documentary (or palimpsestic) impermanence, but first we should review some typical modern-day palimpsests as well as the methods used to create palimpsests in the past.

Palimpsests Today: Textual

Computer screens exemplify modern textual palimpsests in the way they replace one document with another, or one page with the next, on the same reading-and-writing surface. They also serve as precise palimpsests during activities such as word processing, when you create, delete, copy, and move sentences, words, and individual characters. The displays on small-scale computers work as small palimpsests--PDAs, cell phones, calculators, digital wristwatches. The technology of electronic ink or electronic paper, still largely in prototype although making strides, operates along similar lines: the text is stable until another text is called up to replace it (Granmar and Cho 2005).

Unlike the palimpsests of the ancient and medieval worlds, computer screens are nearly perfect in that a "close" or a "delete" is, for all practical purposes, total. The former text does not show through at all. (But recall the phosphorescent burn that could appear on early monitors. It formed a palimpsest in its own right.) Conversely, and clearly unlike former palimpsests, computers can call back stored texts and display them as crisply as before.

There are other examples in addition to computer screens: billboards; scoreboards; chalkboards; interactive whiteboards; walk-don’t-walk signs; airport flight-information monitors; the notes you write in pencil, erasing now and then and writing over the erasures; the changeable flat bed of an old printing press, or the rollers of a new one, repeatedly set up with fresh plates of type; microform viewers. The list goes on. All operate by replacing one text with another on the same plane.

And there are differences or gradations among these modern-day palimpsests. You physically replace the writing on a chalkboard quickly, easily, and more-or-less thoroughly--similar to what our ancient forebears would have done when using charcoal on slates or slabs of stone. Web pages are palimpsests within the computer-screen palimpsest. The changeableness of the information on Web pages or of a Web site’s overall design is part of everyday life and is justified by phrases such as “work in progress” or “iterative process,” yet making changes to an electronic document is less a physical task than a mental one. Calling the result a palimpsest goes well beyond the original meaning of rubbing out the writing on a surface, but the effect is the same. The effect is the same but is

effected more quickly than the ancients could have imagined.

Some modern palimpsests, such as microform viewers, qualify only on their display surfaces. The text and images on the microfiche or microfilm remain inviolable, for all practical purposes, until time and wear take their toll. What changes is the enlarged, displayed image as you move from page to page, viewing the document on a plane separate from the surface that actually carries the work. Similarly, we could argue that a computer screen's text resides not only there but also within the computer's memory or upon its hard disk or in a portable storage device, with this difference: the text is as quickly changeable in unseen storage as it is on the visible display. See figure 1.

For all artifacts of the written word, palimpsestic or otherwise, preservation comes into play. Natural forces, acting as palimpsest agents of a sort, can spell doom for documents of any type. Fire and water, worms and insects--all potentially damage or annihilate the written pages. Earthquakes destroy monumental inscriptions quickly; weather does it more slowly. Electronic texts face their own preservation challenges. Human sheltering and human

intervention are needed to safeguard documents regardless of media format.

Palimpsests Today: Non-Textual

Non-textual palimpsests reside alongside the textual ones. An example is the old Etch-a-Sketch, which authors occasionally compare to the handheld E-book (Rupley 2003). There are filmstrips and slides, motion pictures and television. A film's palimpsestic display changes so rapidly that you cannot detect the individual frames flipping past, and so movies exist thanks to an optical illusion. Beyond the visual media, consider sound recorders of various kinds and how they capture, erase, and record over different auditory events.

Although non-textual palimpsests stretch the original definition of the term even further, they often appear under the palimpsest label in the literature of the humanities and social sciences. Poetic images arise. An automobile’s wipers make a palimpsest of the windshield. A cook may use the same griddle for bacon, then eggs, then pancakes. The body is a palimpsest in the sense of varied daily dress and adornment, and certainly in view of shaving (but tattoos are ineligible because they are too permanent). The walls of an art museum are palimpsestic

with changing exhibits. A city’s skyline changes continuously over time and may vary with stunning swiftness, as in New York on 11 September 2001.

The earth itself, and landscape, and seasons, are all subject to the palimpsest metaphor. A late-nineteenth-century report on metamorphic rocks is titled "The Study of Natural Palimpsests" (Grimsley 1897). In “The Land as Palimpsest,” André Corboz (1983) lists the ways in which the earth changes through natural and human processes: the growth of a river delta on the one hand, the building of roads on the other. As to the human influence, “the inhabitants of a land tirelessly erase and rewrite the ancient scrawls of the soil” (p. 17). The artist Andy Goldsworthy uses the earth as a canvas and sculpture gallery for his deliberately ephemeral works. With natural artifacts--ice, leaves, sticks, rocks--he creates outdoor images and sculpture that the earth's forces will obliterate, and in a sense Goldsworthy’s structures defy preservation (Goldsworthy 1990). Palimpsests occur beyond Earth as well. In reference to certain moons of Jupiter, a palimpsest is “a bright circular feature on an icy surface with very little vertical relief.” That is, an impact crater "whose original morphology has been smoothed out" (*Encyclopedia of Astronomy and Astrophysics* 2004).

In its second definition of “palimpsest,” following the standard papyrus-and-parchment one, the *American Heritage Dictionary of the English Language* (1996) offers “an object, a place, or an area that reflects its history” and it quotes John McPhee: "Spaniards in the sixteenth century . . . saw an ocean moving south . . . through a palimpsest of bayous and distributary streams in forested paludal basins" (p. 1303).

History itself can be considered a palimpsest. According to Charles W. Hedrick, Jr. (2000), “The story of the past can be conceived as a writing over an erasure: history is a rehabilitation. . . . so the representation of the past can be conceived as a writing inscribed over the erasures of time” (pp. xiv, xxii). Thomas Carlyle called the past “that complex manuscript, covered over with formless inextricably entangled characters--nay, which is a *Palimpsest*; and had once prophetic writing still dimly legible there” (McDonagh 1987, 211).

Likewise on the individual level, on the brain/mind/self, as Thomas De Quincey (1998) wrote in 1845: “What else than a natural and mighty palimpsest is the human brain? . . . Everlasting layers of ideas, images, feelings, have fallen upon your brain softly as light. Each succession has seemed to bury all that went before.

And yet in reality not one has been extinguished” (p. 143). A less-positive interpretation from the twentieth century describes the self as “a rewritable fiction resembl[ing] an overly edited palimpsest” (Gillespie 1990, 11).

Another non-textual palimpsest serves to store texts and to make them available: the library, the institution as a whole. The library’s palimpsestic nature shows in the growing and shifting collection that moves upon the shelves over time, and also in the replacement of card catalogs by computers, the replacement of printed index volumes by online databases, and the replacement of 16-mm films by videotapes and of videotapes by DVDs. E-journals are supplanting the printed and bound periodical stock.

Textual palimpsests, the source of all these metaphors, represent the inescapable forces of change, and more precisely their defining feature is replacement. Earlier writing is removed, completely or not, and is replaced--overlain--with different text. We should examine why and how this was done in the past.

Palimpsests of the Past: Why

Our ancestors made palimpsests primarily for reasons of economy (although Roman inscriptions on stone were sometimes palimpsested to defame an individual, as we shall

see below). Despite the fact that Mesopotamia was rich in clay, it make frugal good sense for scribes to erase cuneiform mistakes by folding, smearing, or scraping the pliable clay smooth again. Economic considerations likewise drove the palimpsesting of papyrus and parchment texts. People tend to reuse the surfaces at hand because this is quicker, easier, and less expensive than making completely new platforms. So today we use one computer screen for sequential images.

In ancient Greece and Rome, papyrus and parchment coexisted as writing materials for centuries, yet by the time of the early Christian church parchment had become the preferred medium. When the Muslim conquest of Egypt in the 7th century cut off the northward-flowing papyrus trade, one result was a rise in the palimpsesting of parchment documents. There were only so many goats, sheep, and cows to draw from for pristine writing material (Jamison 2000; Russell 1867; Encyclopedia Americana 1994).

The scribes at work in any scriptorium of medieval Europe used a quantity of prepared animal skins to copy a book. These circumstances were suitable because the rate of literacy was low and the skin supply was usually adequate (Martin 1994), but frugality still won the day. Parchment is made by scraping down the surface of a skin

that has been stretched and dried on a frame. This required technical skills and experience, and so the result was always an expensive product. People typically recycled less-important parchment texts into refreshed sheets to use for works in higher demand (Basbanes 2003). Such palimpsests were one source of the religious works that the intelligensia of the Byzantine world so ceaselessly pursued. Before paper was easily available at a low price, any old parchment book of “texts of no immediate and obvious importance” risked being morphed into a palimpsest to satisfy the demand (Wilson 1999, 98).

Moreover, there may have been an active medieval palimpsest trade whose merchants dealt in cleaned-off parchment. They would have obtained their stock from textual discards, as today’s recyclers gather waste paper. Less drastically, in the ancient Mediterranean world palimpsests were used extensively for ephemeral texts--notes, rough drafts, and letters. Wax tablets and parchment notebooks were meant to be reused countless times. It is possible that friends would exchange letters on the same piece of parchment, one correspondent erasing the other’s letter in order to send a reply (Russell 1867). A form of this practice repeats itself today in the way you

can respond to an E-mail message while deleting all or portions of it.

A type of quasi palimpsest, also driven by economy, is known as cross-writing and was commonly practiced in the nineteenth century. In order both to conserve paper and to save money on postage, a correspondent would fill a piece of stationery front and back, and would continue the letter by writing over it perpendicularly (Nickell 1990). Letters written in this fashion are found in archives and can be read without much difficulty.

The commonplace nature of cross-writing reveals itself in the literature of the age. For example, in Dostoevsky's *Brothers Karamazov* (1990), written between 1879 and 1880, Mitya drunkenly scrawls a letter on a single piece of paper. "Apparently there was not space enough for drunken verbosity, and Mitya not only filled all the margins with writing, but even wrote the last lines across the rest of the letter" (p. 618). And in Thackeray's *Vanity Fair* (1991), written 1847-48, there is a reference to "Miss Dobbin's cross-letter." As he receives his mail, Major Dobbin recognizes among the letters "the handwriting of his sister, who always crossed and recrossed her letters to her brother" (pp. 478, 479). See figure 2.

In contrast to the frugality that drove palimpsesting generally, palimpsests meant to defame involved modifying stone inscriptions and had nothing to do with thriftiness. Defamation by palimpsest occurred under the Romans in an officially sanctioned practice known as *damnatio memoriae*. It was a way of attacking the memory of a dead person, someone who was or who became a public enemy, not so much to obliterate the person's history as to dishonor it. The custom might include banning mourning for the individual, destroying statues and busts, and chipping the person's name from the stone. Pieces were either destroyed completely or merely altered. Often the stone inscriptions were left intact except for the name, which in some cases shows through sufficiently to be read--a partial erasure as a slap at the disgraced individual (Hedrick 2000).

Palimpsests of the Past: How

In addition to why, we should ask how palimpsests were formed, with our focus on parchment because it is history's best-known palimpsest medium. Although some medieval recipes for removing ink from parchment involve complex chemistry (Reed 1972), essentially there were two methods: wet and dry. In the wet process the parchment was moistened and washed with a sponge, then dried, and then

rubbed with a pumice stone. The dry process employed a scraping tool, either to remove a layer of the entire surface or to focus only on the written characters, following the lines of each letter. For paleographers attempting to decipher the original text, the all-surface dry palimpsesting method, if it had been done well, makes the job very difficult; but the latter technique, because the tool scraped along the shapes of the letters, often permits retrieval (Russell 1867).

The way in which the refreshed parchment was written over with another text also affects researchers' ability to recover the original. They can decipher the underscript more easily if the newer writing flows in the same direction and if it is laid down between the lines--but these are optimal conditions. In actuality the original may be upside down or at right angles to the newer text. Writing at ninety degrees to the erased original was typical with medieval parchment palimpsests because this increased the legibility of the new words (whereas nineteenth-century cross-writing preserved the basic readability of both top and bottom layers). The palimpsest’s original text may have been in columns, the later text written across the entire sheet. Worse yet, the newer text may be written directly over the rubbed-out

document, per line and nearly per letter (Russell 1867; Wilson 1999).

In addition, pages of the original document may have been lost, or completely different scraped-down manuscripts may have been cobbled together--and if palimpsest making was a business enterprise we can see how this would happen. Sometimes there are three or more levels of sequential palimpsested writing, which, granted the frustration for paleographers, testifies to the strength and versatility of parchment. A quintuple specimen, the *Codex Arabicus*, takes the prize among known palimpsests by carrying five different layers of text in three languages. (Palimpsests composed of different languages can actually be easier to decipher than those written in the same tongue.) (Russell 1867; Reed 1972; Basbanes 2003).

Palimpsest detectives such as Cardinal Angelo Mai (1782-1854) and many others, patiently teasing out the old writing from the new, have recovered numerous lost manuscripts and fragments of texts of the ancient Greek and Roman writers (Russell 1867). This work continues today and grows ever more effective, thanks in part to new computer-based imaging technologies (Monaghan 2001). A few years ago the Archimedes Palimpsest came to light and was featured in the news. This tenth-century version of some

of Archimedes' mathematical writings had been palimpsested in the twelfth century as a prayer book, the newer text overlain at right angles to the scraped-off original. Using today's technology, scholars are recovering the underlying Archimedes text and diagrams (Biemiller 2001; Netz 2000). Similarly, witness the continuing attempts, as technology develops, to recover any remaining traces of the 18½ missing minutes of voice recording from the Nixon tapes (McNichol 2002).

The Impact of Printing

Widespread palimpsesting eventually came to an end with the rise of printing in mid-fifteenth-century Europe. There were three intertwined reasons for this. First, due to the growth and development of European paper making, parchment was by then about six times more expensive than paper (Hunt and Murray 1999). Second, machine printing became wildly successful. The product of this new phenomenon--multiple-copy books available at a reasonable price to serve the demand of an ever-more literate population--doomed the tradition of scribal book copying as well as the need for reusable parchments. The third reason involves the physical nature of the printed book. It is virtually impossible to make palimpsests of a book's pages.

The oil-based ink is indelible and the paper is too fragile. In this sense the printed book is an anomaly among writing platforms through history: all of the others could be made into palimpsests with a certain amount of work.

Printing itself, however, in its early years may have been responsible for a period of residual palimpsest making. The first printers learned their trade through trial and error, but once the typical product of the printing press grew reliable and refined, some of the scribal texts--now crisply reprinted by machine on paper--may have become devalued to the point of destruction. In 1550, a century after Gutenberg's breakthrough, a Flemish writer named Nicolaus Mameranus complained that people embrace the reprints and accept the fate of the original manuscripts--that having been mechanically reproduced they are "sold, cut up, scraped clean, and then used for other purposes" (Müller 2002, 150).

A worse punishment befell some handwritten texts which ended up scraped and fed to the printing press itself. Although paper was the dominant printing medium, vellum (thin calfskin parchment) could be used, and some of the earliest printed works were entirely produced on parchment palimpsests (Jamison 2000; Russell 1867). Stoddard (1985)

shows an example of machine printing on reused vellum from 1479, the new text of *Aesopus Moralisatus* put at ninety degrees to the partially erased manuscript writing (p. 6).

Expanding on the lament of Mameranus, Müller (2002) accuses the newly printed books of not matching the former hand-produced treasures, which had been carefully preserved and transferred down the generations. He also cites Konrad von Gesner, a Swiss naturalist and bibliographer, who in 1545 wrote about printed books' ephemeral nature. For Gesner, the printed text lacked the aura that surrounded the handwritten book in medieval culture. According to popular notion, a scribal book was a truth-teller, full of arcane knowledge and imbued with magic.

But that is a debate over formats. The authority of the text and the stabilizing forces of writing, whether the document is handwritten or typeset, have long been studied and discussed. Rabelais: "Cela est ecrit. Il est vray" (Bühler 1960, 17). Karl Schottenloher (1989) expressed it this way:

> National feelings and intrinsic cultural values can become a possession of a people that cannot be lost only when they, besides being orally transmitted, are also put down in writing, and are thus protected when confronted by hostile

> accidents. It is only in literature--it is only in the book--that the cultural historical life of the peoples is securely anchored; indeed, as with the Greeks and Romans, it outlasts the life of the peoples themselves (p. 22).

And from Sven Birkerts (1994): “The dual function of print is the immobilization and preservation of language. To make a mark on a page is to gesture toward permanence” (p. 157).

Data Loss

The need for permanence has caused a renewed debate over format, largely due to the growth of computerized text. The changeability and flimsiness of electronic words comprise today's palimpsestic problem, which is aggravated by our quest for speed and convenience.

Moreover, not only do technological developments make us question the future of printed text, but they also weaken the hold of printing ink on paper--the physical grip. Up to about the mid-twentieth century, printing was a matter of metal type pressing into paper and leaving oil-based ink imbedded. In older books you can feel how the type has bitten the paper. The newer technique of offset printing does not press into the paper, but deposits a thin

layer of ink which the paper absorbs slightly. Laser printers apply powdered ink to the paper's surface and fuse it there with heat. The next step leaves the paper entirely, as we read and write on a computer screen. More than 93 percent of new information is estimated to be "born digital" (Larsen 1999; Wiggins 2001).

Birkerts (1994) has observed that an inscription on stone implies the carver's intention toward imperishability. "It has weight, grandeur--it vies with time." The same text on a computer screen imparts a sense of weightlessness. It is "the same sign, but not the same" (p. 155). This idea recalls Marshall McLuhan's well-known phrase, "the medium is the message;" and at this point in time a typical response might be, "So what?" As we grow accustomed to reading and writing digital texts, they take on the authority and stabilizing force that we assume of words printed on paper. We catch the latest news stories on Yahoo!, replete with video clips; we sign our names to the grocery store's credit-card pad; we download articles from the electronic versions of research journals.

Still, we need our texts to be permanent, and we need a sense of imperishability. Acid in paper destroys the pages of books, and rainwater obliterates the inscriptions on headstones. People eventually respond to these threats

in one way or another. Similarly, electronic textual permanence can be bolstered, if not completely assured, by the deliberate preservation of E-documents. Digital preservation is a growing area of concern for librarians, archivists, and scholars--and is now being addressed in earnest.

Gordon B. Neavill (1984) summarizes the problem concisely: “Nothing inherent in the technology of computer-based electronic systems ensures that information in the system will survive” (p. 77) A host of problems, in addition to ephemeral E-texts and palimpsestic work habits, challenge those who would preserve the electronic past. After only a few years, the software application, the operating system, the brand of computer, and the storage medium grow obsolete (Brand 1999). A striking example is the BBC Domesday Project, which was meant to be a modern version of the Domesday Book of 1086. The project’s 12-inch videodiscs became unreadable after only 15 years when the special computers required to play them, costly and few in number, went obsolete (McKie and Thorpe 2002).

Then there is the physical frailty of electronic storage media. An arguably low estimate has magnetic platforms losing their integrity in five to ten years; optical media, such as CDs, in five to fifteen (Brand

1999). In practice these data containers may live somewhat longer, but their instability is a concern nonetheless. Via a line graph titled “The Dilemma of Modern Media,” Paul Conway (1996) demonstrates how “our capacity to record information has increased exponentially over time while the longevity of the media used to store the information has decreased equivalently” (p. 4). In short: clay tablets, papyrus, and parchment have limited capacity, but they tend to endure. We moderns have traded durability of text for mutability and speedy access.

Two promising weapons against creeping obsolescence are migration and emulation. Migration is the transfer of texts from aging software and hardware to those of the moment. It is a deliberate process that must be repeated periodically to ensure “digital continuity.” Emulation software enhances this approach by enabling the latest computers to run programs from the past. Ideally, emulation would allow data and programs to function on any future machine (Brand 1999; McKie and Thorpe 2002).

Libraries, library consortia, and other non-profit bodies are addressing these problems of permanence. As libraries have always done with printed texts, they are committing themselves to the care of civilization’s digital documentary heritage. Some examples of electronic

preservation projects are: the Digital Preservation Coalition, shepherding the Domesday Project and others (http://www.dpconline.org/graphics/); the Internet Archive (http://www.archive.org/); DSpace, a system for digitally preserving universities' scholarly products (http://dspace.org/); and the Library of Congress's National Digital Information Infrastructure and Preservation Program (http://www.digitalpreservation.gov/).

Laura Campbell, leader of the Library of Congress project, echoes Gordon Neavill by pointing out that technology does not preserve content; institutions do (Olsen 2004). Concerns persist, however, in at least two areas: projects like these require continuous funding, and they succeed by virtue of a level of trust between the institutions and the users. Scholars put their faith in the institutions' commitment to preserve and make available the electronic materials they need. "Trust is among the most elusive, yet most ineluctable, cornerstones of the preservation infrastructure now being created" (Donald Waters in Smith 2002).

Conclusion

At no time in history has every written product been preserved, and many have been recycled. From moist clay to

flat-panel monitor, most writing surfaces have permitted the deletion of texts and their replacement with others. Reuse of documents has always been a rational activity in one's immediate time and place--no less so today. Indeed, more so today. Our accelerating electronic lifestyles, relentlessly demanding greater speed and efficiency, make palimpsesting a commonplace and thought-free practice.

Nor should everyday palimpsesting come to an end. We must be realistic, while also accepting some degree of individual responsibility for safeguarding selected E-documents. A similar ethos should operate on the institutional level, where not everything can be kept, yet where preservation initiatives arise to prevent the loss of important materials. This sense of organizational commitment to digital preservation is becoming second nature, as matter-of-course as the protection of printed books and journals. Should it inform the outlook of governmental bodies and other funding sources, all the better. In the midst of our hectic present, where documents come and go in a flash, a digital repository, kept up to date by a program of data migration and emulation, is a calm harbor. It is a place where palimpsesting stops and preserving begins.

References

American Heritage Dictionary of the English Language. 1996. (3rd ed.). Boston: Houghton Mifflin.

Basbanes, Nicholas A. 2003. *A Splendor of Letters: The Permanence of Books in an Impermanent World*. New York: HarperCollins Publishers.

Biemiller, Lawrence. 2001. High-Tech Imaging Detects Glimmers of Archimedes in an Ancient Prayer Book's Pages. *Chronicle of Higher Education: Information Technology* (18 January), at http://chronicle.com/free/2001/01/2001011801t.htm, accessed 10 May 2006.

Birkerts, Sven. 1994. *The Gutenberg Elegies: The Fate of Reading in an Electronic Age*. New York: Fawcett Columbine.

Brand, Stewart. 1999. *The Clock of the Long Now: Time and Responsibility*. New York: Basic Books.

Bühler, Curt F. 1960. *The Fifteenth-Century Book: The Scribes, the Printers, the Decorators*. Publications of the

A. S. W. Rosenbach Fellowship in Bibliography. Philadelphia: University of Pennsylvania Press.

Conway, Paul. 1996. *Preservation in the Digital World* (ERIC microfiche report no. ED393452). Washington: Commission on Preservation and Access.

Corboz, André. 1983. The Land as Palimpsest. *Diogenes* 121 (spring):12-34.

Coulmas, Florian. 1996. *The Blackwell Encyclopedia of Writing Systems*. Oxford, England: Blackwell Publishers.

De Quincey, Thomas. 1998. The Palimpsest. In *Embodied Selves: An Anthology of Psychological Texts, 1830-1890*, ed. Jenny Bourne Taylor and Sally Shuttleworth, 143-145. Oxford, England: Clarendon Press.

Dostoevsky, Fyodor. 1990. *The Brothers Karamazov*. Trans. Richard Pevear and Larissa Volokhonsky. San Francisco: North Point Press.

Encyclopedia Americana. 1994. *The Encyclopedia Americana*, vol. 21:313. Danbury, Conn.: Grolier.

Encyclopedia of Astronomy and Astrophysics. 2004. Bristol, England: Institute of Physics Publishing, at http://eaa.iop.org/index.cfm?action=home, accessed 10 May 2006.

Gillespie, Gerald. 1990. Here Comes Everybody/Nobody: Self as Overly Edited Palimpsest. *New Comparison* 9 (spring):3-15.

Goldsworthy, Andy. 1990. *Andy Goldsworthy: A Collaboration with Nature*. New York: Harry N. Abrams.

Granmar, Marie, and Adrian Cho. 2005. Electronic Paper: A Revolution About to Unfold? *Science* (6 May):785-786. In Academic Search Premier online database, accession no. 17062866, accessed 10 May 2006.

Grimsley, G. P. 1897. The Study of Natural Palimpsests. *American Geologist* 19, no. 1 (January):15-21.

Hedrick, Charles W., Jr. 2000. *History and Silence: Purge and Rehabilitation of Memory in Late Antiquity*. Austin, Tex.: University of Texas Press.

Hunt, Edwin S., and James M. Murray. 1999. *A History of Business in Medieval Europe, 1200-1550*. Cambridge, England: Cambridge University Press.

Jamison, Martin. 2000. The Handheld Electronic Book in Historical Perspective. In *Proceedings of the [63rd] ASIS Annual Meeting*, ed. Donald H. Kraft, 522-533. Medford, N.J.: Information Today.

Larsen, Poul Steen. 1999. Books and Bytes: Preserving Documents for Posterity. *Journal of the American Society for Information Science* 50, no. 11 (September):1020-1027.

Martin, Henri-Jean. 1994. *The History and Power of Writing* Trans. Lydia G. Cochrane. Chicago: University of Chicago Press.

McDonagh, Josephine. 1987. Writings on the Mind: Thomas De Quincey and the Importance of the Palimpsest in Nineteenth Century Thought. *Prose Studies* 10, no. 2 (September):207-224.

McKie, Robin, and Vanessa Thorpe. 2002. Digital Domesday Book Lasts 15 Years Not 1000. *The Observer* (3 March), at http://www.observer.co.uk/uk_news/story/0,6903,661093,00.html, accessed 10 May 2006.

McNichol, Tom. 2002. Cracking the 18½-Minute Gap. *Wired* 10, no. 7 (July):128-135.

Monaghan, Peter. 2001. New Imaging Technique Makes Collections of Ancient Artifacts Legible. *Chronicle of Higher Education: Information Technology* (15 August), at http://chronicle.com/free/2001/08/2001081501t.htm, accessed 10 May 2006.

Müller, Jan-Dirk. 2002. The Body of the Book: The Media Transition from Manuscript to Print. In *The Book History Reader*, ed. David Finkelstein and Alistair McCleery, 143-150. London: Routledge.

Neavill, Gordon B. 1984. Electronic Publishing, Libraries, and the Survival of Information. *Library Resources and Technical Services* 28, no. 1 (January/March):76-89.

Netz, Reviel. 2000. The Origins of Mathematical Physics: New Light on an Old Question. *Physics Today on the Web* (June), at http://www.aip.org/pt/june00/origins.htm, accessed 10 May 2006.

Nickell, Joe. 1990. *Pen, Ink, & Evidence: A Study of Writing and Writing Materials for the Penman, Collector, and Document Detective*. Lexington, Ky.: University Press of Kentucky.

Olsen, Florence. 2004. Librarian Protects Digital Artifacts. *Federal Computer Week* (3 May), at http://www.fcw.com/fcw/articles/2004/0503/mgt-campbell-05-03-04.asp, accessed 10 May 2006.

Reed, R. 1972. *Ancient Skins, Parchments, and Leathers*. Studies in Archaeological Science. London: Seminar Press.

Rupley, Sebastian. 2003. E-Books Reloaded. *PC Magazine* 22, no. 19 (28 October):26. In Academic Search Premier online database, accession no. 11013880, accessed 10 May 2006.

Russell, C. W. 1867. Palimpsest Literature, and Its Editor, Cardinal Angelo Mai. In *The Afternoon Lectures on*

Literature and Art: Delivered in the Theatre of the Museum of Industry, S. Stephen's Green, Dublin, in April and May, 1866, volume 4:97-132. London: Bell and Daldy.

Schottenloher, Karl. 1989. *Books and the Western World: A Cultural History*. Trans. William D. Boyd and Irmgard H. Wolfe. Jefferson, N.C.: McFarland.

Smith, Abby. 2002. Perspectives on Digital Preservation. *CLIR Issues* no. 28 (July/August), at http://www.clir.org/pubs/issues/issues28.html, accessed 10 May 2006.

Stoddard, Roger E. 1985. *Marks in Books, Illustrated and Explained*. Cambridge, Mass.: Houghton Library, Harvard University.

Thackeray, William Makepeace. 1991. *Vanity Fair*. New York: Quality Paperback Book Club.

Wiggins, Richard. 2001. Digital Preservation: Paradox & Promise. *Library Journal Netconnect* (spring):12-15.

Wilson, N. G. 1999. Archimedes: The Palimpsest and the Tradition. *Byzantinische Zeitschrift* 92, no. 1:89-101.